Great Salt Lake Water Quality Studies

Avian Blood Sample Analysis

Avian Blood Sample Analysis

- Background
- Observed high Se concentrations in nesting bird blood samples
- Verified methods and checked data
- Wanted to complete inter-lab comparison of 2006 method to verify results

Avian Blood Sample Analysis

No surplus blood samples from summer 2006 nesting season

Therefore no samples available to split with USGS to verify Se blood levels

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56 Eared Grebes are awaiting analysis

- 25 from early collection (planned for 20)
- 31 from late collection (planned for 20)

Adequate blood volume from each bird for Se analysis but not enough for inter-lab comparison and additional analyses

Therefore need to composite some blood samples

Avian Blood Sample Analysis

- Mike Conover and Gary Santolo selected “spare” samples to be used for compositing
- Tom May/USGS will create 3 freeze-dried composites with 5 blood samples in each, split samples to be sent back to LET

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USGS and LET to complete the following inter-lab comparisons:

- Current HGAA method used for Se blood analysis
- Proposed method for Se + Hg analysis
- Standard Reference Materials for Se/Hg

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Se + Hg Method for Analysis

- 10 eared grebes from early season and 10 from late season from the Hat Island sampling location
- 10 goldeneyes from late season
- Undetermined number of nesting birds from May/June 2007

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Se + Hg Method for Analysis

For LET to be able to complete Se + Hg on eared grebe blood samples, LET must change prep procedure

Current Prep Procedure:

- Freeze-dry samples
- Perform dry-ash digestion for Se analysis

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Se + Hg Method for Analysis

Proposed Prep Procedure:

- Freeze-dry samples
- Perform microwave digestion using nitric/peroxide solution
- Split digestate for Hg and Se analysis
- Perform dry-ash digestion for Se analysis

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LET and USGS will compare results for existing Se method and new Se + Hg prep method

After inter-lab comparison is complete and satisfactory, LET will:

1. Analyze 20 grebe blood samples for Se (with existing prep method)
2. Analyze 20 grebe blood samples for Se + Hg using new prep method

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Next Steps:

1. **Identify nesting species and number of birds to be collected/analyzed for Se + Hg**
2. **Determine path forward**

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Next Steps:

1. If we confirm high Se in blood, then what?
2. If we have low Se in blood, then what?
3. If we confirm high Se and high Hg in blood, then what?
4. If we confirm high Se but low Hg in blood, then what?